

	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments
1	IS&R	L1	1358	(310/328).CCLS.	USPA T	2003/01/17 14:04	
2	IS&R	L2	326	(310/367).CCLS.	USPA T	2003/01/17 14:25	
3	IS&R	L3	118	(310/367).CCLS.	US-P GPUB ; EPO; JPO; DERW ENT; IBM TDB-	2003/01/17 14:29	
4	IS&R	L4	224	(310/328).CCLS.	US-P GPUB ; EPO; JPO; DERW ENT; IBM TDB-	2003/01/17 14:36	
5	BRS	L5	6038	(coil\$3 or helix or helical\$4 or spiral\$4) same (piezoelectric or electromechanical or electroactive or electrodisplacive or electrostrictive or electro adj1 mechanical or electro adj1 active or electro adj1 displacive or electro adj1 strictive)	USPA T	2003/01/17 14:41	
6	BRS	L6	105	(coil\$3 or helix or helical\$4 or spiral\$4) same (piezoelectric or electromechanical or electroactive or electrodisplacive or electrostrictive or electro adj1 mechanical or electro adj1 active or electro adj1 displacive or electro adj1 strictive) adj2 ceramic	USPA T	2003/01/17 15:17	

	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments
7	BRS	L7	129	(coil\$3 or helix or helical\$4 or spiral\$4) same (piezoelectric or electromechanical or electroactive or electrodisplacive or electrostrictive or electro adj1 mechanical or electro adj1 active or electro adj1 displacive or electro adj1 strictive) same ceramic not 16	USPA T	2003/01/17 15:24	
8	BRS	L8	437	(coil\$3 or helix or helical\$4 or spiral\$4) same (piezoelectric or electromechanical or electroactive or electrodisplacive or electrostrictive or electro adj1 mechanical or electro adj1 active or electro adj1 displacive or electro adj1 strictive) same electrode\$1 not 16 not 17	USPA T	2003/01/17 15:34	
9	BRS	L9	21	metal\$7 adj2 (coil\$3 or helix or helical\$4 or spiral\$4) same (piezoelectric or electromechanical or electroactive or electrodisplacive or electrostrictive or electro adj1 mechanical or electro adj1 active or electro adj1 displacive or electro adj1 strictive)	USPA T	2003/01/17 15:14	

	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments
10	BRS	L10	14	metal\$7 adj2 (coil\$3 or helix or helical\$4 or spiral\$4) same (piezoelectric or electromechanical or electroactive or electrodisplacive or electrostrictive or electro adj1 mechanical or electro adj1 active or electro adj1 displacive or electro adj1 strictive)	US-P GPUB ; EPO; JPO; DERW ENT; IBM TDB	2003/01/17 15:15	
11	BRS	L11	83	(coil\$3 or helix or helical\$4 or spiral\$4) same (piezoelectric or electromechanical or electroactive or electrodisplacive or electrostrictive or electro adj1 mechanical or electro adj1 active or electro adj1 displacive or electro adj1 strictive) adj2 ceramic	US-P GPUB ; EPO; JPO; DERW ENT; IBM TDB	2003/01/17 15:17	
12	BRS	L12	234	(coil\$3 or helix or helical\$4 or spiral\$4) same (piezoelectric or electromechanical or electroactive or electrodisplacive or electrostrictive or electro adj1 mechanical or electro adj1 active or electro adj1 displacive or electro adj1 strictive) same ceramic not l11	USPA T	2003/01/17 15:25	

	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments
13	BRS	L13	437	(coil\$3 or helix or helical\$4 or spiral\$4) same (piezoelectric or electromechanical or electroactive or electrodisplacive or electrostrictive or electro adj1 mechanical or electro adj1 active or electro adj1 displacive or electro adj1 strictive) same electrode\$1 not 111 not 112	USPA T	2003/01/17 15:36	
14	BRS	L14	412	(coil\$3 or helix or helical\$4 or spiral\$4) same (piezoelectric or electromechanical or electroactive or electrodisplacive or electrostrictive or electro adj1 mechanical or electro adj1 active or electro adj1 displacive or electro adj1 strictive) same electrode\$1 not 111 not 112	US-P GPUB ; EPO; JPO; DERW ENT; IBM TDB	2003/01/17 15:37	
15	BRS	L15	406	114 not 16 not 17 not 18 not 19 not 110 not 111 not 112	US-P GPUB ; EPO; JPO; DERW ENT; IBM TDB	2003/01/17 15:38	

CLIPPEDIMAGE= JP407307500A

PAT-NO: JP407307500A

DOCUMENT-IDENTIFIER: JP 07307500 A

TITLE: MANUFACTURE OF CERAMIC ACTUATOR

PUBN-DATE: November 21, 1995

INVENTOR-INFORMATION:

NAME

SUGIURA, TADASHI

ASSIGNEE-INFORMATION:

NAME

YOKOGAWA ELECTRIC CORP

COUNTRY

N/A

APPL-NO: JP06100487

APPL-DATE: May 16, 1994

INT-CL (IPC): H01L041/22;H01L041/09

ABSTRACT:

PURPOSE: To obtain a spiral-shaped bimorph-type actuator which is suitable for automation and mass production and whose sensitivity does not become irregular by a method wherein a mixture of a ceramic material and a binder is compressed and molded to be a spiral shape by using a mold which is formed by an extrusion molding operation and which has a spiral-shaped space.

CONSTITUTION: A spiral-shaped bimorph-type ceramic actuator is manufactured by using two layers of piezoelectric materials 20, 50 which use a metal elastic plate 40 as a central electrode. In this case, molds 10, 30 which are formed by a plastic extrusion molding operation and which are provided with spiralshaped spaces 11, 31 are molded, a mixture of a ceramic material and a

binder is filled into the spiral-shaped spaces 11, 31, it is compressed and molded, and a compressed and molded rod-shaped piezoelectric material is cut into thin round slices. For example, by using a mold 10 for molding of a first layer, a first-layer piezoelectric material 20 is molded, the first-layer piezoelectric material 20 and a metal elastic plate 40 are inserted into a space 31 in a mold 30 for molding of a second layer, and a mixture which is used to form a second-layer piezoelectric material 50 is filled, compressed and molded.

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CLIPPEDIMAGE= JP407103999A

PAT-NO: JP407103999A

DOCUMENT-IDENTIFIER: JP 07103999 A

TITLE: ACCELERATION SENSOR

PUBN-DATE: April 21, 1995

INVENTOR-INFORMATION:

NAME

SEKIDO, MUTSUHIRO

UENISHI, KATSUZO

ASSIGNEE-INFORMATION:

NAME

OKI ELECTRIC IND CO LTD

COUNTRY

N/A

APPL-NO: JP05247963

APPL-DATE: October 4, 1993

INT-CL (IPC): G01P015/12;G01P015/02

ABSTRACT:

PURPOSE: To embody an acceleration sensor capable of detecting even a low acceleration, and easy in size reduction.

CONSTITUTION: A mass body 3 received within a cylindrical case 4 is guided by the case and moved when an acceleration is generated, one coil spring-shaped elastic body 1 or 2 is elongated, and the other elastic body 2 or 1 is contracted. At this time, a potential difference according to the acceleration is generated between piezoelectric material films 1b and 2b set as mechanical strain/electric characteristics conversion films respectively in both elastic bodies, because both elastic bodies are electrically connected through the mass body 3. The potential difference is outputted from

electrodes 7, 8 as
acceleration information.

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CLIPPEDIMAGE= JP406022396A

PAT-NO: JP406022396A

DOCUMENT-IDENTIFIER: JP 06022396 A

TITLE: PIEZOELECTRIC ELEMENT AND HYDROPHONE USING THE SAME

PUBN-DATE: January 28, 1994

INVENTOR-INFORMATION:

NAME

HYODO, TAKAYOSHI

MURAKAMI, NORIMICHI

YOSHITAKE, NORIYUKI

SATO, TAKU

SUZUKI, KAZUMOTO

NAKAMURA, KENICHI

ASSIGNEE-INFORMATION:

NAME

TECH RES & DEV INST OF JAPAN DEF AGENCY

KUREHA CHEM IND CO LTD

COUNTRY

N/A

N/A

APPL-NO: JP04198932

APPL-DATE: July 3, 1992

INT-CL (IPC): H04R017/00;H01L041/08 ;H04R001/44 ;H01B007/10

US-CL-CURRENT: 381/190

ABSTRACT:

PURPOSE: To obtain an almost cylinder-shaped polymer piezoelectric element, whose bendability and shock resistance are superior, and which is suited to the transmission and reception of a sound wave, and to provide a hydrophone whose satisfactory wave receiving sensitivity and bendability are maintained by reducing a deformed noise by using the polymer piezoelectric element.

CONSTITUTION: A bendable band-shaped piezoelectric element

10 in which mutually opposed electrode layers 2a and 2b are provided at the both faces of a band-shaped polymer piezoelectric body 1, is spirally wound around a certain shaft 0, and an arrangement structure approximating a cylinder can be obtained as a whole. The plural pairs of opposed electrode layers can be provided at an interval in the length direction of the band-shaped piezoelectric body. It is desired that a pair of band-shaped polymer piezoelectric bodies are used for forming the hydrophone, and laminated through a central metal layer so that the mutual polarizing directions can be opposed.

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CLIPPEDIMAGE= JP405136476A

PAT-NO: JP405136476A

DOCUMENT-IDENTIFIER: JP 05136476 A

TITLE: PIEZOELECTRIC ACTUATOR

PUBN-DATE: June 1, 1993

INVENTOR-INFORMATION:

NAME

DAIMON, SEIKI

TSURUMI, TAKAAKI

FURUTA, KEIICHI

SAITANI, KAZUO

ASSIGNEE-INFORMATION:

NAME

UBE IND LTD

COUNTRY

N/A

APPL-NO: JP03326719

APPL-DATE: November 15, 1991

INT-CL (IPC): H01L041/09;H01L041/24

ABSTRACT:

PURPOSE: To offer a piezoelectric actuator combining a large displacement amount and a generation force without requiring a adhering process.

CONSTITUTION: An entitled piezoelectric actuator consists of a piezoelectric crystal film formed on a corrugated plate elastic body substrate and on the curved part of the substrate by hydrothermal synthesis and an electrode arranged on the piezoelectric crystal film surface. Formation of the piezoelectric crystal film is performed as follows: the elastic body substrate is thrown into a mixed solution of a Pb (NO₃)₂ water

solution, a ZrOCl_2 water solution and a KOH water solution so as to perform surface treatment by hydroheat for generating a crystal nucleus followed by washing and drying. Next, in order to grow the crystal, the substrate having the crystal nucleus is thrown into the $\text{Pb}(\text{NO}_3)_2$ water solution, a ZrOCl_2 water solution, a TiCl_4 water solution and a KOH water solution so as to perform hydrothermal treatment. Thereby, a piezoelectric crystal film is formed on the elastic body substrate. The piezoelectric actuator using a spiral-shaped elastic body substrate is similarly offered.

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CLIPPEDIMAGE= JP360264200A

PAT-NO: JP360264200A

DOCUMENT-IDENTIFIER: JP 60264200 A

TITLE: ULTRASONIC WAVE VIBRATOR

PUBN-DATE: December 27, 1985

INVENTOR-INFORMATION:

NAME

KAGAWA, YUKIO

ANDO, HIDEKAZU

ASSIGNEE-INFORMATION:

NAME

SHIMADA PHYS & CHEM IND CO LTD

KAGAWA YUKIO

COUNTRY

N/A

N/A

APPL-NO: JP59119914

APPL-DATE: June 13, 1984

INT-CL (IPC): H04R017/00

US-CL-CURRENT: 381/190

ABSTRACT:

PURPOSE: To obtain a vibrator with an optional shape and size by forming a sheet form high polymer piezoelectric member having a (+) electrode and a minus (-) electrode on its front and rear side in spiral, respectively.

CONSTITUTION: The (+) electrode 2 and the (-) electrode 3 are fitted to the front and rear side of a sheet form high polymer piezoelectric member 1' made of a material such as polyfluoridevinylidene (PVF₂). Both the electrodes 2, 3 are formed by coating silver paste in a thickness of $2\mu\text{m}\sim 10\mu\text{m}$ and drying it or by means of the vacuum

vapor deposition method. A (+) lead wire 4 and a (-) lead wire 5 are fitted respectively to both the electrodes 2, 3 as a conventional vibrator. Further, an electric insulation layer is provided to the surface of both the electrodes 2, 3. The high polymer piezoelectric member 1' is wound in spiral in this state. Moreover, while the high polymer piezoelectric member 1' is formed flat in this element, the member is polarized in the direction shown in the arrow in figure 3 by applying a specific DC voltage between both the electrodes 2 and 3 to improve the piezoelectricity. The lateral effect vibration is produced in response to the frequency of an electric signal by applying an alternate signal from an electric signal generator to the (+), (-) leads 4, 5 in this element, thereby causing the ultrasonic wave vibration in a direction orthogonal to the high polymer piezoelectric member 1' wound in spiral in the arrow in figure 2.

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CLIPPEDIMAGE= JP360063401A

PAT-NO: JP360063401A

DOCUMENT-IDENTIFIER: JP 60063401 A

TITLE: TOUCH SENSOR

PUBN-DATE: April 11, 1985

INVENTOR-INFORMATION:

NAME

TANAKA, KENICHI

ASSIGNEE-INFORMATION:

NAME

NISSAN MOTOR CO LTD

COUNTRY

N/A

APPL-NO: JP58171215

APPL-DATE: September 19, 1983

INT-CL (IPC): G01B007/00

US-CL-CURRENT: 33/1R

ABSTRACT:

PURPOSE: To simplify the structure and to make the production easy by constituting a touch sensor so that the force applied to one end of a detecting rod is detected as a voltage obtained between electrodes of both faces of a piezoelectric sheet member.

CONSTITUTION: A piezoelectric detecting body constituted by coiling a flexible band-shaped piezoelectric film 10, which is provided with electrodes on both faces and is placed on the market, with an insulating film 11 between layers is provided in a hole 13 in a bracket 12, and a detecting rod 13 is allowed to pierce the center of the hole and has one end supported pivotally on the

bracket 12 by a pivot bearing 14. Lead wires 15 are led out from electrodes on both faces of the film 10 near one end of the film 10, and they are used as detection ends of the piezoelectric detecting body. When a force in the horizontal direction is applied to the detecting rod 13 of the touch sensor constituted in this manner, a certain force is applied to the piezoelectric film 10 independently of the direction of the applied force, and a voltage is outputted from between lead wires 15 and 15. Since the piezoelectric film 10 is coiled, the output is approximately constant for forces having the same strength independently of the direction of the force applied to the detecting rod 13.

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CLIPPEDIMAGE= JP02000174353A

PAT-NO: JP02000174353A

DOCUMENT-IDENTIFIER: JP 2000174353 A

TITLE: HELICAL PIEZOELECTRIC-CRYSTAL ELEMENT AND ITS
MANUFACTURE

PUBN-DATE: June 23, 2000

INVENTOR-INFORMATION:

NAME	COUNTRY
YOSHIDA, RYUICHI	N/A
OKAMOTO, YASUHIRO	N/A
KATSURAGI, KOJI	N/A

ASSIGNEE-INFORMATION:

NAME	COUNTRY
MINOLTA CO LTD	N/A

APPL-NO: JP10347390

APPL-DATE: December 7, 1998

INT-CL (IPC): H01L041/09;H01L041/187 ;H01L041/22

ABSTRACT:

PROBLEM TO BE SOLVED: To obtain a helical piezoelectric-crystal element which is easy to manufacture and excellent in conversion efficiency, and a method for its manufacture.

SOLUTION: A clayey plastic material obtained by mixing piezoelectric ceramic powder with solvent, dispersant, binder, plasticizer and the like is extruded using an extruder into a pipe-shaped member, and conductive films 12a and 12b are formed on the inner and outer faces of the pipe to form a piezoelectric element material 10. Then the piezoelectric element material 10 is helically wrapped around a column 22 on a workbench 21 and is crushed

into a specified thickness, by pressing it from above with a plate 23 to form a cylinder. The conductive film is removed from the outer surface of the cylinder by machining or chemical treatment, and electrode lead wires are connected with the conductive films 12a and 12b. Thereafter, firing is conducted at a specified temperature, and a voltage is applied to polarize the conductive films 12a and 12b as a positive electrode and a negative electrode, respectively, thus, a helical piezoelectric-crystal element is completed.

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CLIPPEDIMAGE= JP411195819A

PAT-NO: JP411195819A

DOCUMENT-IDENTIFIER: JP 11195819 A

TITLE: PIEZOELECTRIC STRUCTURAL BODY AND ITS PRODUCTION

PUBN-DATE: July 21, 1999

INVENTOR-INFORMATION:

NAME	COUNTRY
IMAZU, SHINJI	N/A

ASSIGNEE-INFORMATION:

NAME	COUNTRY
SUMITOMO METAL SMI ELECTRON DEVICES INC	N/A

APPL-NO: JP09361407

APPL-DATE: December 26, 1997

INT-CL (IPC): H01L041/09;H01L041/22

ABSTRACT:

PROBLEM TO BE SOLVED: To form a laminated electrode easily, prevent occurrence of crack on a piezoelectric substrate while an electric field is applied, and ease formation of terminal electrode, by winding a piezoelectric substrate and two electrodes spirally as a column, and exposing one end part of the electrodes on the end part of outer circumference thereof.

SOLUTION: Electrodes 12a and 12b are inserted between piezoelectric substrates 11a and 11b, and the piezoelectric substrates 11a and 11b and electrodes 12a and 12b are wholly wound spirally, forming a columnar piezoelectric structural body 10. The electrode 12b is exposed over the outer circumference surface and the end part of the electrode 12a is exposed over the piezoelectric substrate

11b, and the end parts of the electrodes 12a and 12b are provided originally with the conventional mechanism of terminal electrode. Then the end parts of the electrodes 12a and 12b are connected with a power supply 15, so that an electric field can be applied. Single body of piezoelectric ceramic material having a piezoelectric property such as BaTiO

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DERWENT-ACC-NO: 1999-319466
DERWENT-WEEK: 199927
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TITLE: Piezoelectric actuator for tremulor - includes
terminal electrodes
formed on exposed portion of oscillating electrodes that
are wound alternately
in spiral form between piezoelectric ceramic layers

PATENT-ASSIGNEE: KYOCERA CORP[KYOC]

PRIORITY-DATA: 1997JP-0266384 (September 30, 1997)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE
PAGES	MAIN-IPC	
JP 11112046 A	April 23, 1999	N/A
006	H01L 041/083	

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO
APPL-DATE		
JP 11112046A	N/A	1997JP-0266384
September 30, 1997		

INT-CL (IPC): H01L041/083; H01L041/22 ; H02N002/00

ABSTRACTED-PUB-NO: JP 11112046A

BASIC-ABSTRACT: NOVELTY - The oscillating electrodes
(2a,2b) are wound
alternately in spiral form between two pairs of
piezoelectric ceramic layers
(1a,1b). The two pairs of oscillating electrodes are made
to expose to the
surrounding surface. The terminal electrodes (3a,3b) are
formed on the exposed
portion of oscillating electrodes. DETAILED DESCRIPTION -
An INDEPENDENT CLAIM
is also included for the manufacturing method of
piezoelectric actuator.

USE - For tremulor.

ADVANTAGE - Damage to the ceramic layer by the internal

stress is prevented effectively. DESCRIPTION OF DRAWING(S) - The figure shows the sectional view of piezoelectric ceramic actuator. (1a,1b) Piezoelectric ceramic layers; (2a,2b) Oscillating electrodes; (3a,3b) Terminal electrodes.

CHOSEN-DRAWING: Dwg.2/4

TITLE-TERMS:

PIEZOELECTRIC ACTUATE TERMINAL ELECTRODE FORMING EXPOSE
PORTION OSCILLATING
ELECTRODE WOUND ALTERNATE SPIRAL FORM PIEZOELECTRIC CERAMIC
LAYER

DERWENT-CLASS: V06

EPI-CODES: V06-M06D1;

SECONDARY-ACC-NO:

Non-CPI Secondary Accession Numbers: N1999-239680

CLIPPEDIMAGE= JP357208798A

PAT-NO: JP357208798A

DOCUMENT-IDENTIFIER: JP 57208798 A

TITLE: PIEZOELECTRIC ELECTRO-ACOUSTIC CONVERTER

PUBN-DATE: December 21, 1982

INVENTOR-INFORMATION:

NAME

IZUMI, HIROHIKO

ASSIGNEE-INFORMATION:

NAME

TOSHIBA CORP

COUNTRY

N/A

APPL-NO: JP56093754

APPL-DATE: June 19, 1981

INT-CL (IPC): H04R017/00

US-CL-CURRENT: 381/190

ABSTRACT:

PURPOSE: To attain electric low input and output impedance and to improve the converting efficiency, with spiral multilayer of a high polymer piezoelectric film toward the direction orthogonal to thickness direction.

CONSTITUTION: A high polymer piezoelectric film 1 of band or plate shape with electrodes 2 at the front and back sides is wound in spiral via a thin insulation film 5 to constitute a piezoelectric electro-acoustic converter. The electrodes 2 are provided for the front and back surfaces and polarization processing is given to the high polymer piezoelectric film 1 under a high electric field. In such high polymer piezoelectric film 1,

when an electric
field is applied between the electrode 2, expansion and
contraction is made to
the direction of thickness and width (in parallel with the
electrodes 2) of the
film 1.

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CLIPPEDIMAGE= JP357015600A

PAT-NO: JP357015600A

DOCUMENT-IDENTIFIER: JP 57015600 A

TITLE: TRANSDUCER

PUBN-DATE: January 26, 1982

INVENTOR-INFORMATION:

NAME

OBARA, HIROSHI

ITO, MITSURU

ASSIGNEE-INFORMATION:

NAME

KUREHA CHEM IND CO LTD

COUNTRY

N/A

APPL-NO: JP55090183

APPL-DATE: July 2, 1980

INT-CL (IPC): H04R017/00

US-CL-CURRENT: 381/190

ABSTRACT:

PURPOSE: To achieve high output with a small size, by winding up in spiral shape with hollow section at the center for the laminator of piezoelectric high polymer film with electrodes.

CONSTITUTION: Piezoelectric high polymer films 1, 1' provided with electrodes 2, 3 in thin film on one side are laminated with the electrodes 2, 3 clipped. Further, this laminator is wound up in spiral shape so that a hollow section 4 is formed at the center.

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